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Avant l'expiration du délai prévu pour la modification des revendications, sera republiée si des modifications sont reçues.

(54) Title: NANOCOMPOSITES WITH ACTIVATED INTERFACES PREPARED BY MECHANICAL GRINDING OF MAGNESIUM HYDRIDES AND USE FOR STORING HYDROGEN

(54) Titre: NANOCOMPOSITES A INTERFACES ACTIVEES PREPARES PAR BROUAGE MECANIQUE D'HYDRURES DE MAGNESIUM ET USAGE DE CEUX-CI POUR LE STOCKAGE D'HYDROGENE

## (57) Abstract

The invention concerns a method for preparing a nanocomposite based on magnesium and another element or compound known to absorb hydrogen and hardly miscible when ground with magnesium or its hydride, such as vanadium, titanium or niobium. The method is characterised in that it consists in submitting magnesium or a compound based on magnesium known to absorb hydrogen to hydrogenation to obtain the corresponding hydride in powder form. Said resulting powder hydride is then mixed with the other element or compound or a hydride of said other element or compound and the resulting mixture is subjected to intense mechanical grinding until the corresponding nanocomposite is obtained in the form of a hydride. Finally, if necessary, the resulting nanocomposite is subjected to hydrogen desorption. The invention also concerns the resulting nanocomposite based on Mg, which has the advantage of being inexpensive and highly efficient for storing hydrogen owing to its microstructure (that is owing to the nature of its interfaces and the spatial distribution of its constituents) which is extremely fine and provides an excellent synergistic effect between Mg and the other element or compound.

